Surface Water Availability Assessment in South Carolina
January 9, 2013

Background

South Carolina current has limited scientific information about the availability of our water supplies, and future demands on those water supplies. Georgia has already completed such an evaluation and North Carolina is in the process of conducting a similar assessment. To complement South Carolina's new surface water permitting program (and its existing groundwater permitting program) administered by SCDHEC, and to gather the information necessary to update the State Water Plan developed by SCDNR, surface water availability assessments are needed.

General Approach

It is proposed to conduct a surface water availability assessment and a water demand projection of the eight basins delineated in the surface water permitting regulation. These basins are the Broad, Catawba, Edisto, Pee Dee, Salkehatchie, Saluda, Santee, and Savannah.

The availability assessment would consist of developing a computer-generated model of each of the eight basins to evaluate existing water availability. The water-demand projection would consist of statistical analyses to forecast anticipated water demands for municipal, agricultural,

industrial and energy users over the next 50 years. These analyses will be used to inform the resource agencies and stakeholders if there are areas of the State where there is a "gap" or concern about the amount of water available to meet our increasing demands over the next 50 years.

Surface-Water Models

Hydrologic models would be used to evaluate the existing surface water availability in each basin, to evaluate the impacts of new water withdrawals on the existing system, to identify areas of potential future water-supply shortages and to evaluate proposed solutions to these shortages, and to evaluate the effectiveness of drought-management plans.

For these uses, a model should have the following features: a generally accurate representation of the hydrologic system; the ability to incorporate water withdrawal and discharge data; the ability to incorporate projected future water-use demands; the ability to incorporate projected future changes in climate and precipitation patterns; and it should be suitable for use in all of South Carolina's eight water-planning regions.

Because of staff limitations and time constraints, it is recommended that South Carolina hire an outside contractor to develop a hydrologic model for each water-planning region, with oversight from SCDHEC and SCDNR staff. Stakeholders, such as water suppliers, industry, agriculture, and environmental groups will be asked to participate in model development by providing their available data and reviewing model development to "ground truth" the basin models. Once completed, the contractor would turn the models over to the SC resources agencies, whose staff would have sufficient expertise and training to run the models.

For its water-planning and assessment programs, North Carolina uses a model called OASIS, developed by the company HydroLogics, Inc. In North Carolina, HydroLogics provides the base models, calibrated to current conditions, to NCDENR, whose staff then add demand projections and can use the model to evaluate various water-supply scenarios. The OASIS model is also available for stakeholders in NC to use via the NCDENR web site. NCDENR water resource staff have been very complementary of the model and of the company. One advantage of South Carolina using OASIS is that we could combine our models with the models produced in North Carolina to develop whole-basin models of the Broad, Catawba, and Yadkin/Pee Dee basins, which extend into both states.